II. Remarks

Support for the various amendments made to the claims herein may be found throughout the application as filed. Claims 1 through 20 are cancelled herein. New claims 21 through 49 are added herein and are now pending in the present patent application. No new matter has been added as a result of the claim amendments. Applicants respectfully request further examination and allowance of the new claims in view of the remarks set forth below.

III. Rejections of Claims Made in the Office Action Dated September 5, 2006

In the communication from the Examiner mailed October 17, 2006, the Examiner rejected the then-pending claims on the following basis:

(1) Claims 1-20 were rejected under 35 U.S.C. Section 102(b) as being anticipated by U.S. Patent No. 4,751,380 to Victor.

The foregoing rejection is responded to below.

IV. Response to Rejections Made in the Final Office Action Mailed October 17, 2006

(1) <u>New claims 21-49 presented herein are not anticipated by the Victor Reference.</u>

In rejecting claims 1-20 under 35 U.S.C. Section 102(b) as being anticipated by U.S. Patent No. 4,751,380 to Victor, the Examiner stated:

> As to clam 1, Victor discloses a method for tracking motion across a surface, said method comprising: creating an interference pattern (35, Fig. 3) by reflecting light from said surface (see Fig. 4, and col. 4, lines 46-62); producing, as a result of a sensor (25, Fig. 3) moving across said surface (col. 4, lines 35-45), at least one signal pattern (Fig. 5) corresponding to a detection of an aspect of said interference pattern; and associating said detected aspect with an assumed value to determine a distance traveled by said sensor (see Fig. 6 and col. 8, lines 20-41).
>
> As to claims 2,18, Victor discloses using, as said assumed value, a statistical average of anticipated values for said interference pattern. For example, Victor discloses that the vertical grid lines 41 and 43 and the horizontal grid lines 37 and 39 have approximately the same line wide W. Each set of the grid lines is made up of parallel uniformly spaced grid lines. The spaces 45 are of uniform size with a width approximately equal to the lines width. Typically, the line width W is about 0.5 mm for both vertical and horizontal grid lines. In other word, the statistical average of anticipated values for the interference patter is 0.5X0.5 mm^2.
>
> As to claims 3,11,12,16,20, Victor discloses the light is coherent light, and wherein the aspect is a dimension of a single speckle or a dimension between two speckles (see 16, Fig. 1 and 18, Fig. la; also see col. 5, lines 3-5).
>
> As to claim 4, Victor discloses the assumed value is an average width or length of said speckles (e.g. the average width or length is 0.5 mm
>
> As to claims 5,13, Victor discloses the average width or length of said speckles is statistically derived from a range of anticipated speckle widths or lengths. (See col. 4, lines 64 to col. 5, line 5).

As to claims 6,14, Victor discloses the sensor is incorporated into a computer navigational device (Fig. 5).

As to claims 7-9, Victor discloses linking a plurality of sensors (e.g. A, B, C D, E, F, G, Fig. 3 and 5), wherein each sensor produces a signal pattern corresponding to a detection of an aspect of said interference pattern; and comparing said signals of said linked sensors to determine a direction traveled by said computer navigational device. (See Fig. 5 and col. 7, lines 15-50).

As to claim 10, Victor discloses assuming an aspect of said interference pattern is a constant value (e.g. the space size is 0.5X0.5 mm^2).

As to claim 15, Victor discloses a device to input navigational information into a computer, said device comprising: a source of electromagnetic radiation (e.g. light source 15) producing an interference pattern (35, Fig. 4); and an arrangement of sensors (25), wherein each of said sensors produces a signal pattern (see 3), said sensors (25) producing a plurality of signal patterns such that when at least two of said signal patterns are linked together the resulting signal can be used to determine a direction of movement of said device (see Fig. 5).

As to claim 17, Victor discloses the arrangement comprises at least three sensors arrayed (e.g. A, B, C, Fig. 3) in a first line and at least three sensors arrayed (A, D, F, Fig. 3) in a second line, wherein said first line and said second line are perpendicular (see Fig. 3).

As to claim 19, Victor discloses the arrangement comprises a plurality of sensors arrayed in an approximate circle (see element 25 as shown in Fig. 3) with at least one sensor (e.g. A, B, C, D, E, F, G, Fig. 3) near the approximate center of said circle.

In the "Disclosure of the Invention" section of the Victor patent, it is stated:

> The above object has been met with a cursor position control system in which an optical mouse movable over a grid surface has a detector which is a three-by-three array of detector cells. The surface has a grid pattern thereon which is made up of two intersecting orthogonal sets of parallel grid lines and spaces defined between the grid lines. The grid lines are of a first color and the spaces are of a second contrasting color. The grid lines are uniformly spaced apart and of a uniform line width. The spaces have a width which is equal to the line width. The mouse has a light source which illuminates a portion of the surface and the detector is disposed to receive and detect the light reflected from the surface.
>
> The detector cells image areas of the grid pattern which typically have a characteristic dimension which is substantially equal to one-half of the line width. Seven of the nine detector cells are used. The cells are grouped into pairs of cells which are located so as to image areas on the grid pattern a distance of an odd multiple of line widths apart in a direction which is orthogonal to the direction of motion which they detect. Thus, for example, a pair of cells for detecting vertical motion may be located for imaging areas one line width horizontally apart, thereby ensuring that one of the cells in the pair detects crossings of the mouse through spaces and horizontal grid lines. Alternatively, a pair of cells for detecting vertical motion may be located for imaging areas on the grid which are spaced three, five, seven or some other odd number of line widths horizontally apart. Similarly, pairs of cells for detecting horizontal motion may be located for imaging areas one, three or other odd number of line widths vertically apart. There are two pairs of cells for detecting horizontal motion and two pairs of cells for detecting vertical motion. One pair of cells for detecting a particular direction of motion image areas that are located one-half line width, three-halves line widths or other odd multiple of half line widths apart in that direction of motion from the areas imaged by other related pair of cells, thereby producing a distinguishable lead or lag in the detection by the pairs of cells of crossings over spaces and grid lines.

> The detector cells produce an electrical output signal corresponding to the amount of light they receive. The signals from each of the four pairs of cells are combined and then converted to four quadrature signals of square waves. The quadrature signals switch to a first state when the combined signals are increasing with time and switch to the opposite state when the combined signals are decreasing with time, or vice versa, thereby avoiding threshold problems and the need for a reference voltage. *Col. 2, lines 20-57, U.S. Patent No. 4,751,380 to Victor.*

As described above, and as further described in the Abstract of the Victor reference, Victor discloses a cursor position control system in which some sensors are dedicated to sensing horizontal lines, and other sensors are dedicated to sensing vertical lines. Still other sensors sense neither vertical nor horizontal lines. In any case, it is a requirement of the system disclosed by Victor that the surface over which the cursor position control system moves have a grid of high contrast vertical and horizontal lines printed or otherwise disposed thereon, wherein the grid lines may be easily optically distinguished from the background of the surface upon which they are disposed. The Victor reference discloses projecting light from source 15, the projected light being reflected from grid pattern 18 for sensing by detectors 25, which in turn provide output signals on the basis of which movement may be calculated.

By way of further example, Victor states:

> In FIG. 1, a partial grid pattern 16 may be seen on surface 13, with dark orthogonal lines and white spaces between lines. Surface 13 has a horizontal and vertical repetitive pattern of passive, position related indicia which extends over at least a portion of the surface. Preferably, these indicia are marks of high optical contrast, such as an optically absorptive and reflective pattern. Such a pattern could be a shiny metallic, white or other highly reflective surface with a grid of black lines marked on the surface. The lines are printed with ink having pigment particles with the desired optical property. Alternatively, black squares may be marked on the surface, resulting in the pattern 18 seen in FIG. 1a having reflective grid lines with low reflectivity spaces therebetween. The grid pattern is discussed further below in greater detail with reference to FIG. 4.
>
> The cursor position control system of the present invention, which comprises optical mouse 11 and surface 13 with grid pattern 16, generates electrical signals which instruct a cursor regarding movement up or down, left or right. There is no particular starting place for the mouse on the surface and it may be brought down any place on the surface, so long as there is sufficient room to move the mouse in a direction wherein cursor motion is desired. When placing the mouse on the surface, alignment should be such that detector 25 is appropriately oriented with respect to the grid pattern on the surface, as shown in FIG. 4.

Contrary to the Examiner's repeated assertions in past Office Actions, nowhere does the Victor reference disclose, discuss, hint at or suggest generating light interference patterns with source 15 or detecting light interference patterns with detector 25. Equally plainly, nowhere does the Victor reference disclose, discuss, hint at or suggest generating interference speckles on a surface using a coherent light source for subsequent detection by a plurality of light sensors. operatively associated with the coherent light source.

Instead, Victor discloses sensing areas of grid pattern 18 having high and low light reflectivity that correspond to grid lines and the spaces between grid lines, respectively. See the entirety of the Victor reference.

Nowhere does the Victor reference disclose generating, on surface 13 and along a movement path, a plurality of light interference speckles as a result of the first light beam and a second light beam representing at least portions of the first light beam reflected from the surface interfering with one another. Nowhere does the Victor reference disclose sensing the plurality of speckles with a plurality of light sensors as the optical tracking device is moved along a movement path. Nowhere does the Victor reference disclose determining, on the basis of the sensed speckles, a distance mouse 11 or other device moves over surface 13.

Reference to new claims 21-49 presented herein will show that those claims contain limitations disclosed nowhere in the cited Victor reference.

More particularly, reference to new claims 21-33 presented herein shows that all the following elements and limitations are recited therein:

(a) A method for determining a first distance along a movement path on a surface over which an optical tracking device is moved by a user, comprising:

(b) projecting, from a coherent light source, and along the movement path, a beam of coherent light as a first light beam incident on the surface;

(c) generating, on the surface and along the movement path, a plurality of light interference speckles as a result of the first light beam and a second light beam representing at least portions of the first light beam reflected from the surface interfering with one another;

(d) sensing the plurality of speckles with a plurality of light sensors as the optical tracking device is moved along the movement path, and

(e) determining, on the basis of the sensed speckles, the first distance.

Reference to new claims 34-49 presented herein shows that all the following elements and limitations are recited therein:

(f) A device for determining a first distance along a movement path on a surface over which an optical tracking device is moved by a user, comprising;

(g) a coherent light source configured to project a first coherent light beam along the movement path and onto the surface as an incident light beam;

(h) a plurality of light sensors operatively associated with the coherent light source and configured to sense at least a portion of the incident light beam reflected from the surface as a second reflected light beam;

(i) a processor;

(j) wherein the coherent light source is configured to generate a plurality of light interference speckles on the surface along the movement path as a result of the first light beam and the second light beam interfering with one another;

(k) the plurality of light sensors is configured to detect the speckles along the movement path, and

(l) the processor is configured to determine the first distance on the basis of the sensed speckles.

A rejection based on anticipation under 35 U.S.C. §102 requires that all elements recited in the rejected claims be found within the four corners of the cited reference. Claims 21-33 as amended herein require all of elements (a) through (e) set forth above. Claims 34-49 as amended herein require all of elements (f) through (l) set forth above. Referring to the Victor reference and descriptions of portions thereof set forth above, it becomes clear that Victor discloses none, nor hints at or suggests any, of elements (c), (d) or (e), or (i), (j), (k) or (l), recited in new claims 21-33 or 34-49, respectively.

Thus, it will now be seen that a rejection of such new claims as being anticipated by the Victor reference would be erroneous because claims 21-49 include many elements and limitations disclosed nowhere, and suggested nowhere, in the cited Victor reference.

V. Summary

Claims 21 through 49 remain pending in the application, and are believed to be in condition for allowance. Examination of the application as amended is requested. The Examiner is respectfully requested to contact the undersigned by telephone or e-mail with any questions or comments she may have.

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